Systematics of the *Carlia‘fusca’* complex (Reptilia: Scincidae) from northern Australia

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Abstract

Using a combination of mitochondrial and nuclear genetic markers, karyotypes and morphology, we examine the taxonomy of the Australo-papuan scincid lizard *Carlia‘fusca’* complex in northern Australia, all of which had been assigned previously to *C. longipes*. *Carlia longipes*, shows substantial variation in Y chromosome morphology between populations, indeed more than is seen between other species of *Carlia*. Analyses of the molecular genetic data and morphology demonstrate that populations with different Y chromosomes are two different species and also lead to the recognition of a third species from the Torres Strait. We herein define each of these species, for which previously described names can be applied.

Key words: Lizard, Scincidae, *Carlia*, morphology, mitochondrial DNA, chromosome, allozyme, taxonomy

Introduction

Rainbow skinks, *Carlia* Gray, 1845, are found throughout eastern and northern Australia and New Guinea and its associated islands and some of the Lesser Sunda islands. With recent taxonomic revisions of the Australian (Ingram & Covacevich 1989) and New Guinean (Zug 2004) components of *Carlia*, some recent additions (Zug and Allison 2006) and generic level systematic revisions (Ingram and Covacevich 1988, Kraus 2007, Dolman and Hugall 2008), *Carlia* now comprises some 38 species, with some species formerly included in *Carlia* now placed in *Lygisaurus* de Vis, 1884 (13 species) and *Liburnascincus* Wells and Wellington, 1984 (3 species).

Amongst skinks from the Australian region, *Carlia* are well known for their well-marked patterns and, in particular, sexual dichromatism (Greer 1975). Most species of *Carlia* can at least be distinguished by their pattern and the colour of breeding males. Recent molecular genetic analyses of mitochondrial DNA sequence diversity of these skinks and the related genera, *Liburnascincus, Lygisaurus*, and *Saproscincus* (Stuart-Fox et al. 2002, Mousalli et al. 2005, Dolman and Hugall 2008), show that most species are also separated by sequence divergences of 10% or more. However, closely related species in this assemblage often show few and minor scalation differences (Couper et al. 2005). Consequently taxonomic allocation of older types that have faded in preservation can be contentious. Such an issue arises in the recent taxonomic dissection of the ‘*C.fusca’* group in New Guinea (Zug 2004).

Recent history of taxonomy of ‘*Carlia fusca’* complex

Ingram and Covacevich (1989) revised the Australian members of the ‘*C.fusca’* group and, in doing so, made a preliminary examination of New Guinean specimens. They concluded that Australian *C.fusca* and ‘the